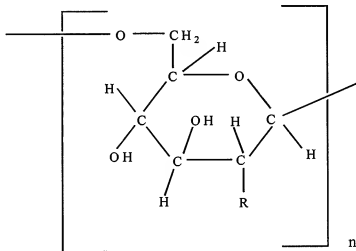


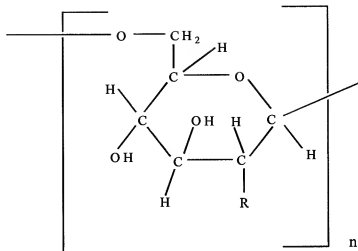
AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A composition comprising isolated β -1,6-glucosamine polymers, wherein less than 40% of glucosamine amino groups in the isolated polymers are substituted with acetate, wherein the composition is sterile, and wherein each of the isolated polymers has a the structure of



wherein n is an integer that is at least four, wherein R is selected from the group consisting of $-NH-CO-CH_3$ and $-NH_2$, and has a molecular weight of at least 800 Daltons.

2. (Currently Amended) A composition comprising an isolated β -1,6-glucosamine ~~polymers~~ polymer conjugated to a ~~carrier compounds~~ compound, wherein less than 40% of glucosamine amino groups in the isolated ~~polymers~~ polymer are substituted with acetate, and wherein each of the isolated ~~polymers~~ polymer has a the structure of



wherein n is an integer that is at least four, wherein R is selected from the group consisting of $-NH-CO-CH_3$ and $-NH_2$, and

has a molecular weight of at least 800 Daltons.

3. (Cancelled)

4. (Previously Presented) The composition of claim 1, wherein less than 35%, less than 30%, less than 25%, less than 20%, less than 15%, less than 10%, or less than 5% of the glucosamine amino groups are substituted with acetate.

5. (Previously Presented) The composition of claim 1, wherein none of the glucosamine amino groups is substituted with acetate.

6. (Previously Presented) The composition of claim 1, wherein the n is an integer selected from the group consisting of at least 6, at least 10, at least 20, at least 50, at least 100, at least 200, at least 300, at least 400 and at least 500.

7. (Previously Presented) The composition of claim 1, wherein the isolated polymers are hetero-substituted polymers.

8. (Previously Presented) The composition of claim 1, wherein each of the isolated polymers has a molecular weight of at least 1,000 Daltons.

9. (Previously Presented) The composition of claim 1, wherein each of the isolated polymers has a molecular weight selected from the group consisting of at least 1200 Daltons, at least 1500 Daltons, at least 2000 Daltons, at least 2500 Daltons, at least 5000 Daltons, at least 7500 Daltons, at least 10,000 Daltons, at least 25,000 Daltons, at least 50,000 Daltons, at least 75,000 Daltons, and at least 100,000 Daltons.

10. (Previously Presented) The composition of claim 1, wherein each of the isolated polymers has a molecular weight selected from the group consisting of at least 125,000 Daltons, at least 150,000 Daltons, at least 200,000 Daltons, at least 250,000 Daltons, at least 300,000 Daltons, at least 350,000 Daltons, at least 400,000 Daltons, at least 450,000 Daltons, and at least 500,000 Daltons.

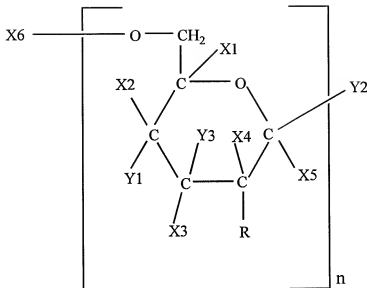
11. (Previously Presented) The composition of claim 1, wherein the length of each of the β -1,6-glucosamine polymers is selected from the group consisting of at least 6, at least 10, at least 20, at least 50, at least 100, at least 200, at least 300, at least 400 and at least 500 monomer units.

12. (Previously Presented) The composition of claim 2, wherein less than 35%, less than 30%, less than 25%, less than 20%, less than 15%, less than 10% or less than 5% of the glucosamine amino groups are substituted with acetate.

13. (Previously Presented) The composition of claim 2, wherein none of the glucosamine amino groups is substituted with acetate.

14. (Previously Presented) The composition of claim 1, wherein the isolated polymers are at least 90% pure, at least 95% pure, at least 97% pure, or at least 99% pure.

15. (Previously Presented) The composition of claim 1, wherein each of the isolated polymers is conjugated to a carrier compound.
16. (Previously Presented) The composition of claim 15, wherein each of the isolated polymers is conjugated to the carrier compound through a linker.
17. (Previously Presented) The composition of claim 15, wherein the carrier compound is a peptide carrier.
18. (Previously Presented) The composition of claim 1, further comprising a pharmaceutically acceptable carrier.
19. (Original) The composition of claim 2, wherein the composition is sterile.
20. (Previously Presented) The composition of claim 1, wherein the isolated polymers are formulated as a vaccine.
21. (Currently Amended) A composition comprising
isolated β -1,6-glucosamine polymers, wherein less than 40% of glucosamine amino groups are substituted with acetate, and
wherein each of the isolated polymers consists of the following structure:



wherein each of X1, X2, X3, X4, X5 and X6 is either H, a carrier compound, or a linker joined to a carrier compound, wherein each of Y1, Y2 and Y3 is either OH, a carrier compound or a linker joined to a carrier compound, provided only one of said X1, X2, X3, X4, X5, X6, Y1, Y2 or Y3 is the carrier compound or the linker joined to the carrier compound, wherein n is an integer that is at least four, wherein R is selected from the group consisting of -NH-CO-CH₃ and -NH₂, and has a molecular weight of at least 800 Daltons.

22. (Cancelled)

23. (Currently Amended) The composition of claim 21, wherein only one of said X1, X2, X3, X4, X5 or X6 is ~~conjugated~~ to the carrier compound or the linker joined to the carrier compound.

24. (Currently Amended) The composition of claim 21, wherein only one of said Y1, Y2 or Y3 is ~~conjugated~~ to the carrier compound or the linker joined to the carrier compound.

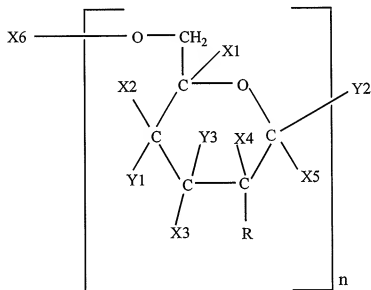
25. (Currently Amended) The composition of claim ~~22~~ 21, wherein the carrier compound is a polysaccharide that is not an N-acetyl β -1,6-glucosamine polymer.

26-41. (Cancelled)

42. (Currently Amended) A pharmaceutical composition comprising the composition of claim 1, wherein the isolated polymers are present in an effective amount to stimulate an immune response in a subject against bacteria that make native PNAG, and are formulated in a pharmaceutically acceptable carrier.

43-85. (Cancelled)

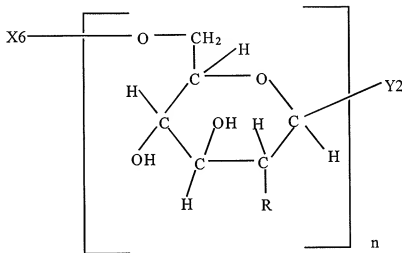
86. (Currently Amended) An isolated polysaccharide comprising a β -1,6-glucosamine polymer, wherein less than 50% of glucosamine amino groups are substituted with acetate, and wherein the isolated polysaccharide has a the structure of



wherein each of X1, X2, X3, X4, X5 and X6 is either H, a carrier compound, or a linker joined to a carrier compound, wherein each of Y1, Y2 and Y3 is either OH, a carrier compound or a linker joined to a carrier compound, provided only one of said X1, X2, X3, X4, X5, X6, Y1, Y2 or Y3 is

the carrier compound or the linker joined to the carrier compound, wherein n is an integer that is at least four, wherein R is selected from the group consisting of $-NH-CO-CH_3$ and $-NH_2$, and has a molecular weight of at least 800 Daltons.

87. (Currently Amended) The isolated polysaccharide of claim 86, wherein the isolated polysaccharide has a the structure of



88. (Previously Presented) The isolated polysaccharide of claim 86, wherein less than 45%, less than 40%, less than 35%, less than 30%, less than 25%, less than 20%, less than 15%, less than 10% or less than 5% of the glucosamine amino groups are substituted with acetate.

89. (Previously Presented) The isolated polysaccharide of claim 86, wherein none of the glucosamine amino groups is substituted with acetate.

90. (Previously Presented) The isolated polysaccharide of claim 87, wherein less than 45%, less than 40%, less than 35%, less than 30%, less than 25%, less than 20%, less than 15%, less than 10%, or less than 5% of the glucosamine amino groups are substituted with acetate.

91. (Previously Presented) The isolated polysaccharide of claim 87, wherein none of the glucosamine amino groups is substituted with acetate.

92. (Previously Presented) The isolated polysaccharide of claim 86, wherein the isolated polysaccharide has a molecular weight of at least 1,000 Daltons.

93. (Previously Presented) The isolated polysaccharide of claim 86, wherein the isolated polysaccharide has a molecular weight selected from the group consisting of at least 1200 Daltons, at least 1500 Daltons, at least 2000 Daltons, at least 2500 Daltons, at least 5000 Daltons, at least 7500 Daltons, at least 10,000 Daltons, at least 25,000 Daltons, at least 50,000 Daltons, at least 75,000 Daltons, and at least 100,000 Daltons.

94. (Previously Presented) The isolated polysaccharide of claim 86, wherein the isolated polysaccharide has a molecular weight selected from the group consisting of at least 125,000 Daltons, at least 150,000 Daltons, at least 200,000 Daltons, at least 250,000 Daltons, at least 300,000 Daltons, at least 350,000 Daltons, at least 400,000 Daltons, at least 450,000 Daltons, and at least 500,000 Daltons.

95. (Previously Presented) The isolated polysaccharide of claim 86, combined with a pharmaceutically acceptable carrier.

96. (Previously Presented) The isolated polysaccharide of claim 86, wherein the isolated polysaccharide is sterile.

97. (Previously Presented) The isolated polysaccharide of claim 86, formulated as a vaccine.

98. (Previously Presented) The composition of claim 15, wherein the carrier compound is a carrier protein.

99. (New) The pharmaceutical composition of claim 42, wherein the bacteria that make native PNAG are *Staphylococci*.